WHAT IS CLAIMED IS:

1   1.   A method for enabling communication between one network device that is a

2   member of a first set of network devices that communicate using a first address format and one

3   network device that is a member of a second set of network devices that communicate using a

4   second address format, comprising:

5   receiving one frame from a first network device in the first set, wherein the frame is part

6   of a first exchange of multiple frames between the first network device and one network device

7   in the second set;

8   allocating a first address in the second address format to the first network device to use

9   to communicate during the first exchange of the frames;

10   receiving one frame from a second network device that is a member of the first set

11   pursuant to a second exchange of multiple frames between the second network device and one

12   network device in the second set; and

13   allocating one address in the second address format to the second network device to

14   use to communicate during the second exchange of frames, wherein the address in the second

15   address format allocated to the second network device is capable of comprising the first

16   address or a second address in the second address format.

1   2.   The method of claim 1, wherein allocating the address in the second address

2   format to one exchange further comprises:

3   indicating that the allocated address is assigned to the exchange; and

4   after the exchange has completed, indicating that the allocated address is not allocated

5   to one active exchange, wherein the address indicated as not allocated to one active exchange

6   is capable of being allocated to a subsequent exchange.

1   3.   The method of claim 1, further comprising:

2   determining whether the first exchange has completed, wherein the first address

3 allocated to the first exchange is not allocated to the second network device for the second

4 exchange if the first exchange has not completed; and

5   allocating the second address in the second address format to the second network

6 device for the second exchange if the first exchange has not completed.

1   4.   The method of claim 2, further comprising:

2   returning busy in response to the frame from the third network device if there is no

3 available address in the second format that is not allocated to one active exchange.

1   5.   The method of claim 2, further comprising:

2   determining one address in the second format that was least recently allocated to one

3 active exchange, wherein the second address allocated to the second exchange is the least

4 recently allocated address.

1   6.   The method of claim 2, further comprising:

2   determining whether one available address in the second address format not allocated

3 to one active exchange was previously allocated to the second network device during one

4 previous exchange; and

5   if one available address in the second format was allocated to the second network

6 device during one previous exchange, then using the previously allocated available address as

7 the second address for the second exchange.

1   7.   The method of claim 6, further comprising:

2   if there is no available no address in the second format previously allocated to the

3   second network device, then using one available address in the second format that is not

4   allocated to one active exchange as the second address for the second exchange.

1   8.   The method of claim 7, further comprising:

2   determining one available address in the second format that was least recently allocated

3   to one active exchange, wherein the determined least recently allocated address is used as the

4   second address if there is no available address in the second format that was previously

5   allocated to the second network device .

1   9.   The method of claim 1, wherein using one allocated address in the second

2   format for the frames in one exchange, comprises:

3   determining an exchange identifier included in each frame in the exchange, wherein each

4   frame further indicates a source and destination network device address in the first address

5   format;

6   determining the address in the second format allocated to the source network device for

7   the exchange identifier; and

8   setting the source network device address to the determined address in the second

9   format.

1   10.   The method of claim 9, further comprising:

2   transforming the destination address in the first address format to the second address

3   format; and

4   transmitting the frame including the first and second network device addresses in the

5   second address format to the second network device.

1   11.   The method of claim 10, wherein the step of transforming the address bits in the

2   destination address to the second address format comprises zeroing out bits in the first network

3   device address in the first address format.

1   12.   The method of claim 1, wherein the step of allocating the address in the second

2   format to the exchange further comprises associating the allocated address to one network

3   device in the first set and the exchange originated by the network device in the first set.

1   13.   The method of claim 1, further comprising:

2   performing an initialization of the network devices in the second set; and

3   determining addresses in the second format not assigned to the network devices in the

4   second set during the initialization, wherein the determined addresses are the addresses capable

5   of being allocated to one network device in the first set to use during one exchange.

1   14.   The method of claim 1, wherein the second set of network devices comprises

2   an arbitrated loop attached to a switch, and wherein the first and second network devices are

3   capable of communicating via one port on the switch.

1   15.   The method of claim 14, wherein the network devices and switch communicate

2   using the Fibre Channel protocol and wherein the arbitrated loop comprises a private arbitrated

3   loop.

1   16.   The method of claim 14, wherein the switch includes a port to which the

2   arbitrated loop is connected, wherein the port allocates the addresses in the second format to

3   exchanges and receives the frames from the network devices in the second set.

1   17.   A system for enabling communication between one network device that is a

2   member of a first set of network devices that communicate using a first address format and one

3   network device that is a member of a second set of network devices that communicate using a

4   second address format, comprising:

5   means for receiving one frame from a first network device in the first set, wherein the

6   frame is part of a first exchange of multiple frames between the first network device and one

7   network device in the second set;

8   means for allocating a first address in the second address format to the first network

9   device to use to communicate during the first exchange of the frames;

10   means for receiving one frame from a second network device that is a member of the

11   first set pursuant to a second exchange of multiple frames between the second network device

12   and one network device in the second set; and

13   means for allocating one address in the second address format to the second network

14   device to use to communicate during the second exchange of frames, wherein the address in the

15   second address format allocated to the second network device is capable of comprising the first

16   address or a second address in the second address format.

1   18.   The system of claim 17, wherein the means for allocating the address in the

2   second address format to one exchange further performs:

3   indicating that the allocated address is assigned to the exchange; and

4   after the exchange has completed, indicating that the allocated address is not allocated

5   to one active exchange, wherein the address indicated as not allocated to one active exchange

6   is capable of being allocated to a subsequent exchange.

1 19. The system of claim 17, further comprising:

2 means for determining whether the first exchange has completed, wherein the first

3 address allocated to the first exchange is not allocated to the second network device for the

4 second exchange if the first exchange has not completed; and

5 means for allocating the second address in the second address format to the second

6 network device for the second exchange if the first exchange has not completed.

1 20. The system of claim 18, further comprising:

2 means for returning busy in response to the frame from the third network device if there

3 is no available address in the second format that is not allocated to one active exchange.

1 21. The system of claim 18, further comprising:

2 means for determining one address in the second format that was least recently

3 allocated to one active exchange, wherein the second address allocated to the second exchange

4 is the least recently allocated address.

1 22. The system of claim 18, further comprising:

2 means for determining whether one available address in the second address format not

3 allocated to one active exchange was previously allocated to the second network device during

4 one previous exchange; and

5 means for using the previously allocated available address as the second address for the

6 second exchange if one available address in the second format was allocated to the second

7 network device during one previous exchange.

1   23.   The system of claim 21, further comprising:

2   means for using one available address in the second format that is not allocated to one

3   active exchange as the second address for the second exchange if there is no available address

4   in the second format previously allocated to the second network device.

1   24.   The system of claim 23, further comprising:

2   means for determining one available address in the second format that was least

3   recently allocated to one active exchange, wherein the determined least recently allocated

4   address is used as the second address if there is no available address in the second format that

5   was previously allocated to the second network device .

1   25.   The system of claim 17, wherein the means for using one allocated address in

2   the second format for the frames in one exchange performs:

3   determining an exchange identifier included in each frame in the exchange, wherein each

4   frame further indicates a source and destination network device address in the first address

5   format;

6   determining the address in the second format allocated to the source network device for

7   the exchange identifier; and

8   setting the source network device address to the determined address in the second

9   format.

1   26.   The system of claim 25, further comprising:

2   means for transforming the destination address in the first address format to the second

3   address format; and

4   means for transmitting the frame including the first and second network device

5   addresses in the second address format to the second network device.

1   27.   The system of claim 26, wherein transforming the address bits in the destination

2   address to the second address format zeroes out bits in the first network device address in the

3   first address format.

1   28.   The system of claim 17, wherein the means for allocating the address in the

2   second format to the exchange further performs associating the allocated address to one

3   network device in the first set and the exchange originated by the network device in the first set.

1   29.   The system of claim 17, further comprising:

2   means for performing an initialization of the network devices in the second set; and

3   means for determining addresses in the second format not assigned to the network

4   devices in the second set during the initialization, wherein the determined addresses are the

5   addresses capable of being allocated to one network device in the first set to use during one

6   exchange.

1   30.   The system of claim 17, wherein the second set of network devices comprises

2   an arbitrated loop attached to a switch, and wherein the first and second network devices are

3   capable of communicating via one port on the switch.

1   31.   The system of claim 30, wherein the network devices and switch communicate

2   using the Fibre Channel protocol and wherein the arbitrated loop comprises a private arbitrated

3   loop.

1   32.   The system of claim 30, wherein the switch includes a port to which the

2   arbitrated loop is connected, wherein the port allocates the addresses in the second format to

3   exchanges and receives the frames from the network devices in the second set.

1   33.   A network system, comprising:

2   a first set of network devices that communicate using a first address format;

3   a second set of network devices that communicate using a second address format;

4   a switch enabling communication between network devices in the first and second sets

5   that implements logic to perform:

6   (i) receiving one frame from a first network device in the first set, wherein the

7   frame is part of a first exchange of multiple frames between the first network device and

8   one network device in the second set;

9   (ii) allocating a first address in the second address format to the first network

10   device to use to communicate during the first exchange of the frames;

11   (iii) receiving one frame from a second network device that is a member of the

12   first set pursuant to a second exchange of multiple frames between the second network

13   device and one network device in the second set; and

14   (iv) allocating one address in the second address format to the second network

15   device to use to communicate during the second exchange of frames, wherein the

16   address in the second address format allocated to the second network device is

17   capable of comprising the first address or a second address in the second address

18   format.

1   34.   The network system of claim 33, wherein the switch logic for allocating the

2   address in the second address format to one exchange further performs:

3   indicating that the allocated address is assigned to the exchange; and

4   after the exchange has completed, indicating that the allocated address is not allocated

5   to one active exchange, wherein the address indicated as not allocated to one active exchange

6   is capable of being allocated to a subsequent exchange.

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1   35.   The network system of claim 33, wherein the switch logic further performs:

2   determining whether the first exchange has completed, wherein the first address

3 allocated to the first exchange is not allocated to the second network device for the second

4 exchange if the first exchange has not completed; and

5   allocating the second address in the second address format to the second network

6 device for the second exchange if the first exchange has not completed.

1   36.   The network system of claim 33, wherein using one allocated address in the

2 second format for the frames in one exchange, comprises:

3   determining an exchange identifier included in each frame in the exchange, wherein each

4 frame further indicates a source and destination network device address in the first address

5 format;

6   determining the address in the second format allocated to the source network device for

7 the exchange identifier; and

8   setting the source network device address to the determined address in the second

9 format.

1   37.   The network system of claim 36, wherein the switch logic further performs:

2   transforming the destination address in the first address format to the second address

3 format; and

4   transmitting the frame including the first and second network device addresses in the

5 second address format to the second network device.

1   38.   The network system of claim 33, wherein the switch logic further performs:

2   performing an initialization of the network devices in the second set; and

3   determining addresses in the second format not assigned to the network devices in the

4   second set during the initialization, wherein the determined addresses are the addresses capable

5   of being allocated to one network device in the first set to use during one exchange.

1   39.   The network system of claim 33, wherein the second set of network devices

2   are attached on an arbitrated loop that is attached to the switch, and wherein the switch further

3   includes one port through which network devices in the first and second sets can communicate.

1   40.   The network system of claim 39, wherein the network devices and switch

2   communicate using the Fibre Channel protocol and wherein the arbitrated loop comprises a

3   private arbitrated loop.

1   41.   The network system of claim 39, wherein the port implements the logic that

2   allocates the addresses in the second format to exchanges and receives the frames from the

3   network devices in the second set.

1   42.   An article of manufacture for enabling communication between one network

2   device that is a member of a first set of network devices that communicate using a first address

3   format and one network device that is a member of a second set of network devices that

4   communicate using a second address format, by:

5   receiving one frame from a first network device in the first set, wherein the frame is part

6   of a first exchange of multiple frames between the first network device and one network device

7   in the second set;

8   allocating a first address in the second address format to the first network device to use

9   to communicate during the first exchange of the frames;

10   receiving one frame from a second network device that is a member of the first set

11   pursuant to a second exchange of multiple frames between the second network device and one

12   network device in the second set; and

13   allocating one address in the second address format to the second network device to

14   use to communicate during the second exchange of frames, wherein the address in the second

15   address format allocated to the second network device is capable of comprising the first

16   address or a second address in the second address format.

1   43.   The article of manufacture of claim 42, wherein allocating the address in the

2   second address format to one exchange further comprises:

3   indicating that the allocated address is assigned to the exchange; and

4   after the exchange has completed, indicating that the allocated address is not allocated

5   to one active exchange, wherein the address indicated as not allocated to one active exchange

6   is capable of being allocated to a subsequent exchange.

1   44.   The article of manufacture of claim 42, further comprising:

2   determining whether the first exchange has completed, wherein the first address

3   allocated to the first exchange is not allocated to the second network device for the second

4   exchange if the first exchange has not completed; and

5   allocating the second address in the second address format to the second network

6   device for the second exchange if the first exchange has not completed.

1   45.   The article of manufacture of claim 43, further comprising:

2   returning busy in response to the frame from the third network device if there is no

3   available address in the second format that is not allocated to one active exchange.

1   46.   The article of manufacture of claim 43, further comprising:

2   determining one address in the second format that was least recently allocated to one

3   active exchange, wherein the second address allocated to the second exchange is the least

4   recently allocated address.

1   47.   The article of manufacture of claim 43, further comprising:

2   determining whether one available address in the second address format not allocated

3   to one active exchange was previously allocated to the second network device during one

4   previous exchange; and

5   if one available address in the second format was allocated to the second network

6   device during one previous exchange, then using the previously allocated available address as

7   the second address for the second exchange.

1   48.   The article of manufacture of claim 47, further comprising:

2   if there is no available no address in the second format previously allocated to the

3   second network device, then using one available address in the second format that is not

4   allocated to one active exchange as the second address for the second exchange.

1   49.   The article of manufacture of claim 48, further comprising:

2   determining one available address in the second format that was least recently allocated

3   to one active exchange, wherein the determined least recently allocated address is used as the

4   second address if there is no available address in the second format that was previously

5   allocated to the second network device .

1   50.   The article of manufacture of claim 42, wherein using one allocated address in

2   the second format for the frames in one exchange, comprises:

3   determining an exchange identifier included in each frame in the exchange, wherein each

4   frame further indicates a source and destination network device address in the first address

5   format;

6   determining the address in the second format allocated to the source network device for

7   the exchange identifier; and

8   setting the source network device address to the determined address in the second

9   format.

1   51.   The article of manufacture of claim 50, further comprising:

2   transforming the destination address in the first address format to the second address

3   format; and

4   transmitting the frame including the first and second network device addresses in the

5   second address format to the second network device.

1   52.   The article of manufacture of claim 51, wherein the step of transforming the

2   address bits in the destination address to the second address format comprises zeroing out bits

3   in the first network device address in the first address format.

1   53.   The article of manufacture of claim 42, wherein the step of allocating the

2   address in the second format to the exchange further comprises associating the allocated

3   address to one network device in the first set and the exchange originated by the network

4   device in the first set.

1   54.   The article of manufacture of claim 42, further comprising:

2   performing an initialization of the network devices in the second set; and

3   determining addresses in the second format not assigned to the network devices in the

4 second set during the initialization, wherein the determined addresses are the addresses capable

5 of being allocated to one network device in the first set to use during one exchange.

1   55.   The article of manufacture of claim 42, wherein the second set of network

2 devices comprises an arbitrated loop attached to a switch, and wherein the first and second

3 network devices are capable of communicating via one port on the switch.

1   56.   The article of manufacture of claim 55, wherein the network devices and switch

2 communicate using the Fibre Channel protocol and wherein the arbitrated loop comprises a

3 private arbitrated loop.

1   57.   The article of manufacture of claim 55, wherein the switch includes a port to

2 which the arbitrated loop is connected, wherein the port allocates the addresses in the second

3 format to exchanges and receives the frames from the network devices in the second set.